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**January 28, 1993**

**Donna R. Searcy**  
**Secretary**  
**Federal Communications Commission**  
**1919 M Street, N.W., Room 222**  
**Washington, D.C. 20554**

Re: **ET Docket No. 92-9**  
**RM-8004**

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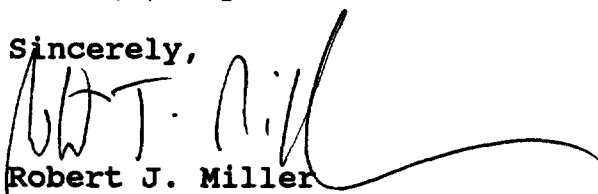
**FCC - MAIL ROOM**

**Dear Ms. Searcy:**

Alcatel Network Systems, Inc. inadvertently omitted the attached pages from its Reply Comments, filed on January 27, 1993, in the above-referenced matter. However, all the service copies are complete.

Please associate these pages with the Commission's original and four (4) copies.

Sincerely,

  
**Robert J. Miller**  
**RJM/mfg**

**attachs.**

**GW03/134925**

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Since the OET study relied so heavily on using the 4 GHz band to accommodate current and further displaced users of the 2 GHz band and because the amount of spectrum available for point-to-point users was being dramatically reduced, Alcatel suggested that narrow band channels be established based on the bandwidth efficiency requirements that exist in the 4 GHz band today. This is how the 1.6, 0.8, and 0.4 MHz bandwidth channels and their corresponding minimum data rate requirements were established. (Please note that it was intended to allow concatenation of either two 1.6 MHz channels or four 0.8 MHz channels to accommodate 8 DS1 requirements in 3.2 MHz.)

Paragraph 21.122 was incorporated into the FCC rules 18 years ago. Digital radios employing 64 QAM or 49 QPR modulation techniques have been in production for at least 12 years. All of the major digital radio manufacturers selling to the US market (Alcatel, AT&T, Farinon, Northern Telecom, and Telesciences) have produced 64 QAM or 49 QPR radios. These facts lead Alcatel to believe that the suggested narrow channel bandwidths would not affect the industry's competitiveness and are in the best interest of the current and future users.

The "Joint Commenters" (Farinon, Telesciences, and DMC) recognize "... that the spectrum is a scarce and valuable resource that requires efficient use." (page 7) They also "... view spectrum efficiency as one of the most important factors in determining the technical rules..." (page 7) The Joint Commenters further state "... the needs of users and equipment manufacturers would be best served by a phased approach to implementing new spectral efficiency limits for digital equipment. Under this approach, existing bit efficiency would apply until the expiration of a five-year period." (page 17) To which "new spectral efficiency limits" are they referring? The existing 4 GHz, 6 GHz, or 11 GHz limits? Which "existing bit-efficiency requirements" would apply for the next five years?

Alcatel has suggested using the existing 4 GHz bandwidth efficiency requirements to accommodate the maximum number of users within the limited remaining spectrum. The Joint Commenters have suggested using the existing 4 GHz bandwidth efficiency for 5 MHz channels but then relax to the existing 6 GHz bandwidth efficiency for their proposed 2.5 and 1.25 MHz channels. Why?? Both Farinon and Telesciences have type accepted radios that carry 12 DS1's in 5 MHz or less at 6 GHz. Surely the technology required to continue this trend to 1.6 and 0.8 MHz does not elude them. Why then do they suggest 1.25 and

2.5 MHz bandwidths to handle capacities that could be accommodated in 0.8 and 1.6 MHz bandwidths, respectively?

The Joint Commenters state "... 1.25 MHz-based channels are preferable to 1.6 MHz-based channels in that they are more spectrum efficient." (page 6) The Joint Commenters support this claim by showing that 0.8 and 1.6 MHz channels do not divide evenly into 5, 10, 20 or 30 MHz thereby leaving some unused "... large spectrum remnants." They calculate this "wasted spectrum" to be 1.2 MHz per 30 MHz channel. Their argument points out that 1.25 and 2.5 MHz channels have no spectrum remnants, however, there are also 50% fewer channels available to users. This results in 10.8 MHz of "wasted spectrum" per 30 MHz channel or, stated another way, it will require 45 MHz total bandwidth to carry what could have otherwise been carried in 30 MHz. The 1.25 and 2.5 MHz channels, therefore, don't appear to be more spectrum efficient than 0.8 and 1.6 MHz channels.

To further clarify this point, Alcatel commissioned Comsearch to provide additional details of the existing users in the 2 GHz bands. There are 13,208 frequencies currently (as of late 1992) licensed in the 2130-2150, 2180-2200 MHz private/op fixed band. Of these, 6,340 occupy 1.6 MHz and 6,208 occupy 0.8 MHz. If all of these users were moved to higher frequencies using 1.25 and 2.5 MHz bandwidths rather than 0.8 and 1.6 MHz bandwidths, it would require 8.5 GHz of additional spectrum to accommodate them. This does not seem to be in the long-term best interest of microwave users or manufacturers. Furthermore, 87% of the private analog 2 GHz frequencies (approximately 21,566) and all of the common carrier digital 2 GHz frequencies can be accommodated in channel bandwidths of 5 MHz or less. This is why the maximum number of narrow band channels that can be accommodated in the remaining spectrum is required. This is also why Alcatel suggested 1.6, 0.8 and 0.4 MHz channel bandwidths.

As a compromise to manufacturers who purport to have an equipment investment in 1.25 and 2.5 MHz bandwidth radios, Alcatel offers the following suggested amendment:

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This would allow manufacturers desiring to use 1.25 and 2.5 MHz bandwidths to use 1.6 or 3.2 MHz (or smaller using concatenation) channels and yet provide for the maximum possible number of channels for users. The two-year time frame appears appropriate since that is the approximate amount of time allowed in 1974 for a similar transition (see 21.122(d)).

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